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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/493,091	01/28/2000	Patrick Brindel	Q57709	1773

7590

09/11/2002

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EXAMINER

LI, SHI K

ART UNIT


PAPER NUMBER

2633

DATE MAILED: 09/11/2002

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Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 09/493,091	Applicant(s) BRINDEL ET AL. 	
	Examiner Shi K. Li	Art Unit 2633	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 28 January 2000.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-14 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-14 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s). _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Drawings

1. FIGs. 1-6 are objected to under 37 CFR 1.84(o) because there are no descriptive legends for the boxes. A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.
2. Figure 1 should be designated by a legend such as --Prior Art-- because only that which is old is illustrated. See MPEP § 608.02(g). A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.
3. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they do not include the following reference sign(s) mentioned in the description: 16 for FIG. 2 and FIG. 3. A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

Claim Rejections - 35 USC § 112

4. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.
5. Claim 2 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. The dependent claim adds the limitation such that “the number of [successive]

regenerators is a submultiple of the number of regenerators". It is understood that the number of regenerators equals, and therefore is always a submultiple of, the number of regenerators.

Claim Rejections - 35 USC § 102

6. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

The changes made to 35 U.S.C. 102(e) by the American Inventors Protection Act of 1999 (AIPA) do not apply to the examination of this application as the application being examined was not (1) filed on or after November 29, 2000, or (2) voluntarily published under 35 U.S.C. 122(b). Therefore, this application is examined under 35 U.S.C. 102(e) prior to the amendment by the AIPA (pre-AIPA 35 U.S.C. 102(e)).

7. Claims 1, 3, 8, 11-12 are rejected under 35 U.S.C. 102(e) as being anticipated by Uehara (U.S. Patent 6,256,125 B1).

Regarding claim 1, Uehara discloses a multichannel WDM transmission system in FIG. 7 including a transmitter and WDM end station connected by an optical line including several optical fibers and a set of nodes. Uehara shows the details of each node in FIG. 2 where a regenerative repeater is included to regenerate a subset of the channels.

Regarding claim 3, Uehara shows the regeneration of one channel in FIG. 2.

Regarding claim 8, Uehara includes demultiplexer (AWG) 1 and multiplexer (AWG) 3 in FIG. 2.

Regarding claims 11 and 12, Uehara includes a dedicated channel λ_{SV} for supervisory in FIG. 2. Uehara also includes controller 7 and monitor signal transmitter 5 to transmit information relating to the status of the regenerator. The AWG 3 multiplexes the dedicated channel with the other channels.

Claim Rejections - 35 USC § 103

8. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

9. Claims 4, 6 and 7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Uehara (U.S. Patent 6,256,125 B1) in view of Cao (U.S. Patent 6,337,755 B1).

Uehara has been discussed above in regard to claims 1, 3, 8, 11-12. Regarding claim 4, the difference between Uehara and the claimed invention is that Uehara does not specify the regenerator as optical regenerator. Cao teaches the art of optical regenerator in FIG. 1. Cao gives some of the advantages of an optical regenerator in col. 1, lines 25-27 as bit rate independence, high speed and low cost. Thus it would have been obvious to one of ordinary skill in the art at the time the invention was made to use optical regenerator, as taught by Cao, in the transmission system of Uehara because of its bit rate independence, low cost and high speed.

Regarding claims 6 and 7, the modulator in FIG. 1 of Cao includes a clock recovery circuit 24 to synchronize with the modulator and the modulator is a synchronous modulator as described in col. 3, lines 35-38.

10. Claims 2 (insofar as it is understood or as best as understood in view of second paragraph of 35 U.S.C 112 rejection, and the assumption that claim 2 means "the number of successive regenerators is a submultiple of the number of channels") and 5 are rejected under 35 U.S.C. 103(a) as being unpatentable over Uehara (U.S. Patent 6,256,125 B1).

Uehara has been discussed above in regard to claim 1. Regarding claim 5, the difference between Uehara and the claimed invention is that Uehara regenerates one channel in each regenerator while the claimed invention regenerates two channels. Uehara teaches the use of a monitor circuit to determine the channel that needs to be regenerated in FIG. 6 and col. 9, lines 13-23. When the total number of channels increases or the transmission distance between regenerators increases, it is possible that the S/N ratios of more than one channels have been deteriorated to a value below the threshold and need to be regenerated. Thus it would have been obvious to one of ordinary skill in the art at the time the invention was made to regenerate two channels in each regenerator in the transmission system of Uehara when the total number of channels or the transmission distance between regenerators increases.

Regarding claim 2, when each regenerator regenerates two channels, the number of successive regenerators is a half of the number of channels.

11. Claim 9 is rejected under 35 U.S.C. 103(a) as being unpatentable over Uehara (U.S. Patent 6,256,125 B1) in view of Bo et al. (W. Bo et al., "Fiber Gratings Based Optical Add/Drop Multiplexer with Low Interferometric Crosstalk", International Conference on Communication Technology, ICCT'98, October 22-24, 1998).

Uehara has been discussed above in regard to claim 1. The difference between Uehara and the claimed invention is that Uehara uses a multiplexer/demultiplexer to separate the channel

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for regeneration and recombine the channels after regeneration while the claimed invention uses inserter/extractor for isolating channels to be regenerated. Bo et al. teaches an OADM in FIG. 2 which can be used to extract/insert one or more specific channel from a WDM system. This OADM is ideal for extracting a small number of channels and has low insertion loss and good isolation. Thus it would have been obvious to one of ordinary skill in the art at the time the invention was made to use an inserter/extractor to isolate the channel for regeneration, as taught by Bo et al., in the transmission system of Uehara because an inserter/extractor has low insertion loss and good isolation.

12. Claim 10 is rejected under 35 U.S.C. 103(a) as being unpatentable over Uehara (U.S. Patent 6,256,125 B1) in view of DiGiovanni et al. (U.S. Patent 5,050,949).

Uehara has been discussed above in regard to claim 1. The difference between Uehara and the claimed invention is that Uehara does not include a compensation amplifier. DiGiovanni et al. teaches the importance of equalizing the power level of the channels of a WDM system in col. 1, lines 16-35. DiGiovanni et al. also teaches the use of optical amplifier to equalize the channels. Thus it would have been obvious to one of ordinary skill in the art at the time the invention was made to include an optical amplifier to equalize the power of the channels, as taught by DiGiovanni et al., in the transmission system of Uehara because power equalization improves the performance of the transmission system.

13. Claim 13 is rejected under 35 U.S.C. 103(a) as being unpatentable over Uehara (U.S. Patent 6,256,125 B1) in view of admitted prior art (admission).

Uehara has been discussed above in regard to claim 11. The difference between Uehara and the claimed invention is that the supervisory unit does not receive a portion of the

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regenerated signal from the regenerator unit. Uehara teaches the use of a monitor circuit to monitor the SNR of a channel in FIG. 6. Admission in p. 8, lines 6-7 teaches that the supervisory channel contains information relating to the status, performance, etc. of the regenerator. Thus it would have been obvious to one of ordinary skill in the art at the time the invention was made to include information from the regenerator unit, as taught by admission, and a portion of the regenerated signal by a monitor circuit, as taught by FIG. 6 of Uehara, in the supervisory channel in the transmission system of Uehara to facilitate network management.

14. Claim 14 is rejected under 35 U.S.C. 103(a) as being unpatentable over admitted prior art (admission) in view of Uehara (U.S. Patent 6,256,125 B1).

Admission discloses in FIG. 1 an arrangement of optical amplifiers and regenerators such that the distance between two regenerators is a multiple of the distance between two amplifiers (see p. 5, lines 4-8). The difference between the admission and the claimed invention is that in the prior art, all channels are regenerated while the claimed invention only regenerated a small number of channels out of the total number of channels. Uehara teaches the regeneration of a single channel in FIG. 2. A channel needs to be regenerated only if its SNR has been deteriorated below a threshold. Thus it would have been obvious to one of ordinary skill in the art at the time the invention was made to arrange the regenerators and amplifiers in such a way that the distance between two regenerators is a multiple of the distance between two amplifiers, as known in prior art, and the regenerators only regenerate the subset of channels whose SNR have been deteriorated below a threshold, as taught by Uehara.

Conclusion

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Any inquiry concerning this communication or earlier communications from the examiner should be directed to Shi K. Li whose telephone number is 703 305-4341. The examiner can normally be reached on Monday-Friday (8:30 a.m. - 5:00 p.m.).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jason Chan can be reached on 703 305-4729. The fax phone numbers for the organization where this application or proceeding is assigned are 703 872-9314 for regular communications and 703 872-9314 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703 305-3900.

skl
September 9, 2002


JASON CHAN
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TECHNOLOGY CENTER 2600